

IUTAM Symposium on Mechanical and Electromagnetic Waves
in Structured Media

SOLID MECHANICS AND ITS APPLICATIONS

Volume 91

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The fundamental questions arising in mechanics are: *Why?*, *How?*, and *How much?*
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For a list of related mechanics titles, see final pages.

IUTAM Symposium on

Mechanical and Electromagnetic Waves in Structured Media

Proceedings of the IUTAM Symposium
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18–22 January 1999

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Preface

The IUTAM Symposium on Mechanical and Electromagnetic Waves in Structured Media took place at the University of Sydney from January 18-22, 1999. It brought together leading researchers from eleven countries for a week-long meeting, with the aim of providing cross-links between the communities studying related problems involving elastic and electromagnetic waves in structured materials. After the meeting, participants were invited to submit articles based on their presentations, which were refereed and assembled to constitute these Proceedings.

The topics covered here represent areas at the forefront of research into elastic and electromagnetic waves. They include effect of nonlinearity, diffusion and multiple scattering on waves, as well as asymptotic and numerical techniques. Composite materials are discussed in depth, with example systems ranging from dusty plasmas to a magneto-elastic microstructured system. Also included are studies of homogenisation, that field which seeks to determine equivalent homogeneous systems which can give equivalent wave properties to structured materials, and inverse problems, in which waves are used as a probe to infer structural details concerning scattering systems. There are also strong groups of papers on the localization of waves by random systems, and photonic and phononic band gap materials. These are being developed by analogue with semiconductors for electrons, and hold out the promise of enabling designers to control the propagation of waves through materials in novel ways.

We would like to thank the other members of the Scientific Committee (A. Priou, A. Jordan, V.I. Erofyev, M.A. Hayes, R.K.T. Hsieh, A.B. Movchan, G.W. Milton, N. Phan-Thien and A. Thess) and of the Organizing Committee (N.F. Cramer, C.M. de Sterke, S. Mackinlay, E. Morris, and A.Reuben) for their help in selecting participants, arranging the venues and functions, and supporting participants. The Symposium ran efficiently and in a friendly atmosphere, and the scientific interchanges were excellent, and this can be attributed in large part to the work of those mentioned.

We would also like to record our appreciation of those who provided the sponsorship which enabled the event to occur, and which helped the travel of researchers from all round the world to Sydney. Our sponsors were: IUTAM, the University of Sydney and the University of Technology Sydney.

Finally, we would like to note that the Symposium was the last scientific event which our colleague, Sergei Bulgakov, was able to attend. Unbeknownst to us, he was fighting a terminal illness, but came to the Symposium, and interacted fully in its program. As a small token of our respect for the ability, dedication and courage of Sergei, we have included in this volume a brief tribute to him, as well as his last paper.

ROSS MCPHEDRAN, LINDSAY BOTTEN AND NICOLAE NICOROVICI

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